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IMPLEMENTATION OF INFORMATION TECHNOLOGY GOVERNANCE IN THE MALAYSIAN PUBLIC SECTOR PRACTICE

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Abstract

The increased dependence on IT and rise of security threats in organisations has led to the awareness of the need for adopting formal IT governance practices. However, how far have organisation come to realise the implementation of these practices is yet unknown at least in the Malaysian context. The article discusses information technology governance practices in public sector agencies from the perspective of an emerging country like Malaysia. The study sets forth to explore how the Malaysian public sector agencies implement IT governance through structure, process and relational mechanisms. This research uses qualitative approach in selected public sector agencies in EPU, ICU, MoF and CGICT. The result shows that each public sector agency define IT governance structure, process and relational mechanisms to align IT and business, thus enabling collaboration between business units and IT. Each public sector agencies in this case study practices IT governance structure, process and relational mechanism to align IT and business using different approaches based on organisational context.

Keywords— information technology governance; public sector; information technology governance mechanisms

1 INTRODUCTION

The last decade witnesses information technology (IT) governance capturing the attention of both practitioners and academics. IT governance was cited as a subset of corporate governance (Korac-Kakabadse & Kakabadse, 2001; Lainhart, 2000). The rising interest in IT governance is attributed to organisations' pressing need to comply with Sarbanes-Oxley Act (SOX) 2002, the Basel II Accord, and to protect IT investments from severe losses. Lainhart (2000) suggests that IT governance concerns primarily with policies and procedures that define how organisations direct and control the use of technology and protect its information from IT-related risks.

IT governance involves discharging roles and responsibilities in assuring sound IT practices in organisations. van Grembergen (2000) refers to IT governance as "the ability of the organisations to achieve specified goal(s) or organisational capacity, exercised by the board, executive management and IT management to control the formulation and implementation of IT strategy and to ensure the fusion of business and IT." The IT Governance Institute (ITGI, 2003), a professional body established in 1998, identifies IT governance as "... the responsibility of the board of directors and executive management, where it is an integral part of enterprise governance and consists of the leadership and organisational structures and processes that ensure the organisation's IT sustains and extends the organisation's strategy and objectives."

The Malaysian public sector has gone through tremendous reform since the advancement of electronic government (e-government) with the aim of improving service delivery and quality of performance to civil servants, business and citizen. According to strategic IT plan (2011-2015) by Malaysian Administrative Modernisation and Management Planning Unit, the Malaysian government has introduced economic transformation plan to accommodate quality economic implementation through initiatives like *zero* face-to-face service delivery; *paper less* government; inculcating information sharing and interoperability; cross-agency collaboration; government shared services; and skills and expertise internalisation of public sector ICT personnel. However, several challenges to e-government in Malaysia have emerged and hinder the achievement of these initiatives and they are standard, privacy and security, data integration, legacy system maintenance, mindset change, processes, and collaboration between agencies (Kaliannan, et al., 2007; Morshidi & Hamid, 2010).

Additionally, Paper and Change (2009) found several other barriers to transform the public administrative so that to enhance and improve the development of e-government. They are;

- misunderstanding the impact of the long term control and maintenance efforts, absence of implementation guidance and best practices, insufficient understanding of clients and lack of transformational readiness result from national action plan for enhanced service delivery as transformation effort.
- the lack of an organisation-wide overview, detached front and back office, gap between IT and administrative departments, unclear responsibilities for process ownership, limited availability of resources, ad-hoc integration based on demand, and lack of cooperation with other organisations to enhance the service delivery, which is defined from a demand-driven customer orientation and change from a soloed structure to a process-oriented organisation's transformation.
- business process from the transformation of limited business process re-engineering observed; only the front office creation leads to the barrier of lack of knowledge from implications of the e-government for the alignment of the ICT to the organisation by process redesign, limited knowledge of business process reengineering, unavailability of the detailed process descriptions, and focus only on front office and back office is left behind.

- lack of data standards for interoperability, legacy systems hindering integration, and dependency on software vendors for system innovation is determined from installing technology supporting the transformation, such as brokers and multi-channel services.

Thus, recognising the challenges and barriers in e-government, this paper aims to explore how IT governance practices are implemented in public sector organizations to improve the public sector service delivery. In particular, this study explores IT governance practices from the perspective of structure, process and relational mechanisms. Hence, the research question is: ***How IT governance practices are implemented in public sector organisations?*** The paper has six sections. This section introduces the research. Section two presents the review of literature. Section three provides the research method. In section four, we present the research findings. A discussion follows in section five. The last section concludes the paper.

2 IT GOVERNANCE FRAMEWORK

In the last decade, the works of van Grembergen and de Haes has contributed into insights on IT governance implementation as elements consisting of structure, process and relational mechanisms (de Haes and van Grembergen, 2004, 2005, 2006, 2008; 2009). Their conceptualisation on IT governance implementation framework was based on Peterson (2000, 2001), and, Weill and Woodham (2002). Several other researchers adopted this framework (Figure 1) to explore IT governance implementation in various organisational contingency factors (Schlosser and Wagner, 2011; Kuruzovich, Bassellier and Sambamurthy, 2012; Nfuka, 2012).

2.1 Structure

Structure consists of organisational units and, roles and responsibilities for making IT decisions (Weill & Ross, 2004) between the management in the organisation and the cooperation of IT committee. The governance structure details how many levels or layers of committees there are and outlines each of their primary roles (Grant, McKnight, Uruthirapathy and Brown, 2007). Structures describe the way IT function is organised and organisation structure of IT division (Rau, 2004).

Governance structures also include reporting relationships, governance-specific positions, and committees that execute governance processes (Symons, 2005). Among the specific IT governance structure practices are;

- Reporting relationship of CIO to the CEO so that IT is always in the business agenda,
- Specific IT governance positions like IT governance officer or IT relationship manager assigned to report to CIO and to communicate needs between IT and business units (de Haes and van Grembergen, 2009),
- IT strategy committee/IT governance committee/IT governance council considers board involvement in IT agenda (Hardy, 2003; Rau, 2004; van Grembergen and de Haes, 2005),
- IT steering committee comprises high level executive management team from various departments within an organisation, enabling the link between enterprise and IT strategies (de Haes and van Grembergen, 2009).

2.2 Process

Process refers to strategic decision making, strategic information systems planning (SISP) and monitoring using tools such as the IT balanced scorecard (IT BSC) and framework such as COBIT, ITIL, ISO17799 and maturity models, information economics, service level agreements, IT demand management, IT portfolio management and, chargeback systems (Symons, 2005; van Grembergen and de Haes, 2005). Besides IT balanced scorecards, project tracking systems and IT charge-back systems are necessary for

effective performance measurement mechanisms and enables the IT strategy committee to detect and correct any deviations, and alter strategy when required (ITGI, 2003; Syaiful Ali and Green, 2007).

2.3 Relational

The relational mechanism manages the soft side of IT governance that covers announcements, advocates, channels, and education efforts that disseminate IT governance principles and policies and outcomes of IT decision-making processes (Weill and Ross, 2004; de Haes and van Grembergen, 2005). According to Peterson et al. (2000), relational mechanism involves participation and collaboration among corporate leaders, IT management and business management, hence ensures alignment between business and IT. Past researchers suggested variety of ways to promote active participation and collaboration between business and IT and they are;

- corporate communication systems (Peterson, 2004; Syaiful Ali and Green, 2007),
- senior management announcements (Weill and Ross, 2004),
- formal committees (Weill and Ross, 2004),
- office of CIO or IT governance (Weill and Ross, 2004),
- web-based portals (Peterson, 2004; Weill and Ross, 2004),
- joint performance incentives and rewards (Peterson, 2004)
- co-location (Peterson et al., 2000; Peterson, 2004)

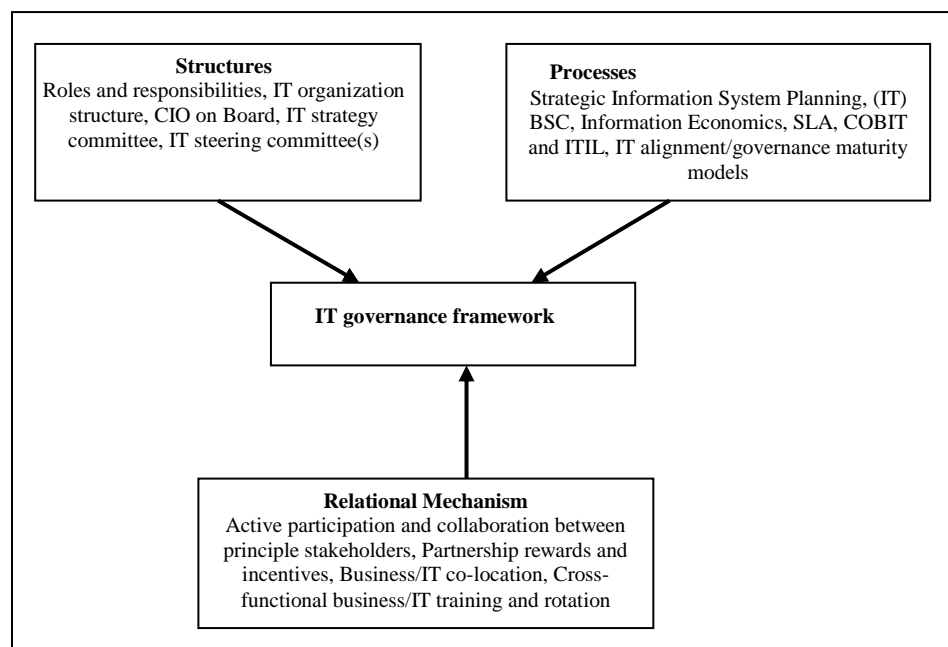


Figure 1. Necessary elements of IT Governance framework (Peterson, 2004; de Haes and van Grembergen, 2006; 2008)

3 RESEARCH METHODOLOGY

Qualitative approach was used as the research methodology, as this study seeks to answer the question of how Malaysian public agencies implement IT governance practices. Qualitative research methodology using strategy of inquiry is deemed more appropriate to understand and describe IT governance mechanisms in public sector agencies. Thus, this study adopted a case study approach to develop an in-

depth investigation of describing and understanding IT governance practices within selected public sector agencies. The case study research method is useful for addressing the “how” questions, in the exploratory stage of knowledge building (Benbasat et al., 1987). Multi-case study approach was deemed necessary as planning and development of e-government projects is dependent upon adequate funds and implementation and monitoring of central government projects. This study explores IT governance practices in public sector agencies as a tool to align business process and technology.

Data collection was conducted using semi-structured questionnaire and face-to-face interviews. Face-to-face interviews were recorded and later transcribed into transcripts, so that data can be analysed to identify their themes and patterns, and organising it into coherent categories (Taylor and Renner, 2003). Using the backdrop of IT governance framework from de Haes and van Grembergen (2008) and Montazemi et al. (2010), interview questionnaire was developed for IT representatives. Each agency was represented by a respondent with the position of director/deputy director of IT unit and based on their availability to participate in this research. Each interview session lasted between 45 minutes to 2 hours. Several other sources of documents were collected and reviewed such as agency’s brochure, reports and website information.

4 RESEARCH CONTEXT

Interviews was carried out at several different multiple case sites consisting of four agencies. The four selected agencies are Center of Government in ICT management (CGICT); Economic Planning Unit (EPU); Ministry of Finance (MoF); and Implementation Coordination Unit (ICU). CGICT was selected as the first respondent due to its involvement in planning and spearheading development of ICT in the public sector agencies. The other agencies were selected base on recommendation from CGICT and that CGICT dependent on these agencies in terms of funding (EPU and MoF), implementation and monitoring central government projects (ICU).

CGICT, a unit under the Prime Minister Department, that is responsible for introducing and promoting new initiatives in the administration and management of the public service. The unit plans, advices, coordinates, and assesses the implementation of ICT development towards strengthening government service delivery. The unit is also liable for providing consultation services in organisational management and ICT development to all government entities to ensure that the structure, system, work procedures and implementation are in line with government efforts. The strategic vision and mission of CGICT is to move towards smart government that focuses on transparency, openness and integration, aligned with national agenda of Vision 2020. Total annual IT spending amounts to MYR2.3billion largely invested in development of National Key Economic Areas (NKEAs) programs as stipulated in 10th Malaysia Plan.

EPU is the principal government agency under the Prime Minister Department responsible for preparing development plans for the nation. EPU formulates policies and strategies for national socio-economic development, prepares long-term and medium-term development plans, prepares budget, controls and evaluates development programs and projects including aspects on inclusive development and *bumiputera* agenda, carries out economic researches and advises the government on economic issues. At present there are around 500-600 employees in EPU. Annual IT budget is MYR4.5million with IT expenditure amounts to MYR3.5million.

ICU functions as secretariat under the Prime Minister Department mainly to coordinate, monitor and evaluate the implementation and outcome of Malaysia’s five-year development plans; also manages, implement and monitor the allocation of Prime Minister’s special projects and, to coordinate, monitor and evaluate projects for people's welfare. ICU has been given the mandate to oversee the implementation of electronic government and serves as a catalyst to the success of Multimedia Super Corridor (MSC)

project. ICU has three main divisions and they are; Special Project Coordination sector, Delivery Transformation Centre sector, and Strategic Development sector with a steering committee that refers to Project Monitoring Task Force. The Strategic Development sector through its National Databank and Innovation Centre ensures the readiness and reliability of ICT infrastructure that supports ICU operation, monitors national development projects, creates excellent work culture through the use of application systems and provides quality technical support services for its clients. Annual IT budget amounts to MYR10million that covers system enhancement and update for three national level systems, SPP II, *eKasih* and *BLESS*.

MoF functions as to formulate and implement fiscal and monetary policies in order to; ensure effective and efficient distribution and management of financial resources, formulates financial management and accounting processes, procedures and standards to be implemented by all government departments. MoF too manages the acquisition and disbursement of federal government loans, monitors MoF incorporated companies effectively managed, monitors the financial management of ministries, government departments and statutory bodies. Annual IT budget is between MYR1million to MYR2 million.

5 FINDINGS

This section focuses on IT governance structure, process, and relational mechanisms in each case study. All case study organisations agree that IT governance is important and is critical for alignment between business and IT, however, implementation differs from one agency to another. CGICT takes a process perspective of IT governance implementation using Enterprise Architecture (EA) framework. Though EPU is at the stage of planning for EA framework implementation, several organisational capabilities were developed to align business and IT strategies. ICU and MoF define IT governance as a function to achieve collaboration between business units towards achieving business goals.

5.1 CGICT

As CGICT plays a central role to chart out ICT development for every public sector agencies, responsible for ICT planning and development specifically ensuring that ICT applications in public sector agencies are standardised, consolidated and integrated.

The IT department is headed by Deputy Director-General (ICT) also known as government chief information officer (GCIO). GCIO plays the role of ensuring alignment of the public sector ICT strategic plan with the requirements of the national development plan; to strengthen ICT policy, standards and practice; to encourage ICT acculturation in the public sector service delivery system; and to innovate in electronic government applications, infrastructure and ICT security. GCIO reports directly to Chief Secretary to the Government. GCIO is assisted by the ICT security officer (ICTSO) to ensure that all ICT security infrastructures are in accordance with the security principles based on ICT Security Policy Framework and the Government Security Directive. As CGICT spearheads many projects throughout the year, each project consists of IT steering committee that monitors the development, operations, and security of a project.

CGICT has a strategic plan in place known as public sector ICT Strategic Plan (2011-2015). Enterprise architecture is developed to predict the strategic plan for the next five years. Besides this, IT governance framework and reference model are referred to such as COBIT, ITIL, and TOGAF. Each project is evaluated against its investment, and any access from the budget is returned to MoF. IT budget control and reporting is done on a weekly basis and project progress is monitored using a system called *myPrestasi*. *myPrestasi* measures key performance indicators and the deliverables of projects assigned to sections.

CGICT collaborates at the inter-organisational level when other government agencies require assistance in implementation of ICT application. Training requirements are based on public sector needs.

5.2 EPU

As the central planning agency, EPU plans for other public sector agencies (stakeholders). Therefore, structure in EPU consists of many sections. Within the IT department there are various units such as technical unit, application development unit, administration unit and strategic unit. The strategic unit in IT department is mainly responsible for identifying organisational need, capabilities and current trends in new technology and green IT adoption. Both senior IT management and head of functional department has the authority to make decision for ICT.

In EPU there is a clear delineation of roles and responsibilities of governance and/or alignment tasks and activities, however, the agency lacks proper documentation. The board of directors, executive management, functional managers, IT managers and audit/compliance officers are authorised to manage IT-related risks. Every department/functional managers are responsible for ensuring optimum use of resources, delivery of IT services as accordance to business requirements, prioritisation of IT, IT costs, and ensuring that the work force is able to use IT systems productively. Both functional managers and IT managers is responsible to ensure that personnel in their department understand the IT objective(s) and IT performance is measured. Alignment between IT and business strategy is the authority of board of directors, executive management, functional managers and IT managers.

Practices like strategic information systems planning, IT performance measurement and COBIT are not followed due to existence of enterprise architecture (EA) framework. Portfolio management does exist it is being stated in the EA documentation. All stakeholders, business processes and changes in systems development are documented so that the EA steering committee ensures that no silo systems exist.

Service level agreement exists in the form of client's charter that is being use as to achieve internal/external collaboration with other public sector agencies and/or companies with regard to any activity on economic development plan. Furthermore, EA approach facilitates internal alignment with the business process and IT, integrating applications to avoid redundancy.

EPU actively promotes and campaigns EA as the agency understands the capabilities needed from EA implementation. Trainings in EA have been identified for IT personnel.

5.3 ICU

In ICU, IT issues get the attention and it is a regular agenda at the level of board of directors. Members of the board of directors have the expertise and experience regarding IT value, IT-related risks and IT assurance activities. The IT steering committee at the executive or senior management level is responsible for determining business priorities for IT investment. The head of the IT department reports directly to the director of ICU. In the public sector, an agency or ministry receives budget from MoF once EPU approves their proposed budget. The budget covers the operational and development budget.

The Strategic Development Sector division ensures the readiness and reliability of ICT infrastructure that supports ICU operations, and uses an application, SPP II, to monitor national development projects. IT stewardship in ICU champions the alignment strategy between project priorities and strategic objectives. There is strategic plan in this agency. The IT manager understands its role and responsibility for decisions pertaining to optimum use of resources, and ensuring that everyone in the organisation understands the IT objectives. Both board of directors and IT managers are responsible for decisions pertaining to IT-related risks, ensuring quality of IT systems appropriate for business needs, ensuring IT services delivered in line with business requirement and prioritisation and, implementing and monitoring independent assurance mechanisms so as to assure that critical areas are operating as intended. While decisions in IT cost optimisation, ensuring that every employee able to use IT systems productively and, ensuring that adequate confidentiality, integrity and availability is in place is the responsibility of functional manager and IT manager. The IT manager and audit/compliance manager is responsible for measuring IT performance and detecting problems related with IT. During an audit, all ICT development projects are audited for process efficiency and effectiveness, and these auditors provide feedback in strategic plan development but does not involve in decision making for IT.

As for process mechanism, ICU refers to a combination of IT governance framework because one framework does not fit the business process. Every IT project is monitored for its planned business benefits during and after implementation, however, there are systems found to be not fully utilised. A system known as strategic plan system was developed to monitor and track projects using key performance indicators. Every head of division in ICU is responsible to monitor project progress under their division using a scorecard, thus eases the tracking of strategic plan execution for the entire agency. As an example, the IT department uses a scorecard to record response time taken by IT staff to cater need of a client (ICU staff) and system availability. The deputy director too uses this scorecard to monitor each division. There is also an executive dashboard which monitors all divisions and sections. The executive dashboard consists of altogether nine systems developed by ICU.

In public sector, there is no specific scheme allowing job-rotation and co-location but it comes naturally in the way IT and business people work together. As an example, IT people may do managerial work and management people sometimes do IT job to analyse something. Cross-training is visible in this agency as management people do provide management training to IT personnel and IT people provides training in systems and technology to the management. Several in-house developments with collaboration with other agencies including government link companies and public sector agency have been established such as the SPP II system for private and public agency, *eKasih* for citizen, *BLESS* system setup for businesses requesting for operating license.

5.4 MoF

MoF is a central agency and the IT department is responsible for supporting the operations of treasury. MoF is aware and adopts policies and guidelines established by CGICT. IT stewardship in MoF mainly responsible for measuring and communicating the value of ICT to the rest of the functional departments in the agency. Business process managers have low level of understanding the strategic role of IT in MoF. Thus, IT department set forth to develop an enterprise architecture framework to align business process and IT.

IT manager has the authority to make decisions for agency so as to achieve optimum use of its resources, understanding and managing IT-related risks, ensuring that adequate confidentiality, integrity and availability is in place and measuring ICT performance. Both functional manager and IT manager are responsible for ensuring that IT and business strategy are aligned, quality of IT systems appropriate for intended business needs, ICT services are being delivered in line with business requirements and priorities, ICT costs are optimised, and ensuring that the workforce is able to use ICT systems productively. As for providing an independent assurance needs and detecting problems related with ICT, is the responsibility of an audit/compliance manager. Board/executive management, functional manager and IT manager must ensure that their employees understand the ICT objectives.

There is a strategic information system planning present but MoF is in the process of developing EA framework. One major setback is that most IT projects involving application development were developed in silos. Thus EA methodology would help MoF to achieve strategic alignment and additionally IT governance framework like COBIT is also adopted. IT governance awareness campaign like IT trainings, conducting seminar and promoting security awareness would help employees to recognize the role of IT.

Table 1 illustrates a summary of IT governance practices as implemented in the studied case sites. The summary presents several strengths and weaknesses in IT governance implementation. The structure in IT organisation enables IT to support core business function thus realizing the strategic vision and mission of the agency. However, alignment between business and IT is still weak to so much so that businesses have failed to understand the existence of IT. To overcome this problem, agencies are planning for enterprise architecture framework as a solution to collaborate IT and business. Furthermore the existence of strategic IT plan promotes alignment between business and IT.

IT Governance Mechanisms	EPU	MoF	ICU	CGICT
Structure				
Organisation and IT department structure	Central planning agency. ICT department act as support team for corporate management. Establishing local/ enterprise- wide ICT responsibilities.	Federal government. Measuring and communicating value of ICT to departments.	Supporting all core business function. Managing all IT requirements based on user requirement.	GCIO reports to Chief Secretary to the Government. Aligning project priorities with strategic objectives. Defining, sourcing, and funding complete sets of business processes.
Strategic vision business and the role of IT	ICT department have high understanding on EPU’s strategic vision. However, business unit lacks understanding about IT especially in terms of sharing and integrating data.	IT department in MoF do have high understanding of their responsibilities to achieve MoF’s vision and mission.	High understanding on ICU’s strategic vision and mission. Ensure that their organization operate effectively and quality in their service.	Strategic vision and mission of CGICT do highlight the role of ICT.
Process				
How managers and employees use ICT	Presence of silo applications. Managers and employees exhibit cooperation between departments, enacting horizontal processes across functional departments.	ICT-enabled operational responsibilities are defined, but traditional localized modes of operating persist in departments. Presence of low standard and low integration between business processes.	Strategic plan of ICU defines the responsibilities for each operation in each section. Determine process and operation for other agencies by providing a system that can help those agencies.	Managers and employees exhibit cooperation between departments, enacting horizontal processes across functional departments. Managers and employees are organized around end-to-end processes and enact highly standardized processes that cross multiple functional departments.
Strategy process to align business and IT	Align the business process and IT using EA approach as a formal process. Integrate the silo development with new application and ensure there is no redundant application.	Currently silo development - there is no formal alignment between IT side and business process. EA approach under planning to align business process and IT	Using a tool as a formal process - SPSS (System Plan Strategic). The system as the tool to ensure each business unit monitors their KPIs.	Align business process with IT based on investment on a project.
IT investment towards business benefits (cost and budget)	Government agencies within their ministry, provide their strategic plan to EPU. EPU determines plan to be executed (RMK10, NKEA projects) and acceptable budget. The acceptable budget will be directed to MoF and allocation is provided to the ministry.			
Relational				
Executives understanding of strategic IT issues, dependence on IT, technology insights and capabilities	All EPU staff rely on IT because of email. But they have low understanding of the role of ICT in strategic IT issues, technology insight and capabilities since the business people think they still can work without IT.	Not all executive understand of strategic IT issues. Therefore, business people do have low understanding of the role of ICT in MoF.	Business people have high understanding of the role of ICT and really depend on IT due to strategic plan of ICU which includes strategic ICT plan.	The executive need to have high understanding of the role of ICT and organisation dependence on ICT.
Collaboration between IT, business process manager, finance and auditors	Both business and IT collaborate in systems development but lack in terms of governance. Thus, EA framework implementation would help to achieve standardised and high collaboration between IT and business people.	Low collaboration between IT and business people. Business people think the job of IT is trivial - develop an application is as easy like using Microsoft Word. Recently business people aware their role since they are developing EA.	IT collaborates with other business units. IT conducts impact analysis to plan for strategic ICT.	Collaboration between IT and business is present.

Table 1. Summary of IT Governance Practices in Studied Agencies

6 CONCLUSION

The findings indicate that all four public sector agencies conform to structure, process and relational mechanisms of IT governance practices. As Montazemi et al. (2010) asserted that IT stewardship is imperative particularly in ICT-enable change, operations, and best use of human and capital resources driven by business process change. Thus IT stewardship in the studied case agencies presents distinctively different approach to strategic ICT leadership. The strategic approach concerns with initiative of ICT department to align IT and business.

- CGICT aligns the project priorities with strategic objective involve in defining, sourcing, and funding complete set of business process.
- IT stewardship in EPU establishes agency wide ICT responsibilities.
- IT stewardship in ICU aligns project priorities with strategic objective.
- IT stewardship in MoF is measuring and communicating value of ICT to departments.

The studied case agencies follow a formal strategic process to align IT with business process. CGICT uses *myPrestasi* system as a tool to align the project and investment within the deliverable achievement which is indicated in that system. EPU uses a framework approach to align with the internal collaboration. While in ICU uses a system as a tool to help them align IT and business namely strategic planning system. MoF intends to shift from silo applications to standardised and integrated systems with the use of EA framework.

Relational mechanism identifies collaboration between business and IT as a practice to ensure that the business people understand the role of IT in organization. CGICT collaborates between IT, business process manager, finance and auditors. Executives in CGICT have high understanding of the role of ICT and organisational dependence on ICT. Though EPU employees use email as corporate communication system, the business people perception towards IT and understanding the strategic role of IT, technology insight and capabilities is minimal as they think they can work without IT. Collaboration in system development exists but lack in terms of governance. Additionally, EPU does not conform to any standard collaboration but they are moving towards EA implementation which aims at standard and high collaboration between IT and business people. In ICU, the business people have a high understanding on the role of ICT and heavily depend on ICT because they believe that the IT department from the strategic plan of the ICU which includes the strategic ICT plan. They have collaboration with the other business units. But in terms of the audit they perform by their own which means that in the IT department they have a team working on the impact analysis. The impact analysis results the information for them to plan the strategic ICT. However, in MOF not all executive understand the strategic IT issues. Therefore, business people have low level of understanding the role of ICT and low collaboration between IT and business.

The study highlights the adoption of IT governance practices in selected public sector agencies for the benefit of practitioners, academics, and government as a whole. While some useful insights into IT governance practices in these agencies have been obtained from this study, future research should focus on both qualitative and quantitative study in order to gain a better understanding of IT driven governmental benefits so as to promote IT governance practices in public sector.

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APPENDIX A: Interview Questions

Section A

Please tell us about your ministry or agency

1. Ministry / Agency Name :
2. Contact No. (office):
3. No. of employees:

Please tell us about yourself

1. Name:
2. Email:
3. Job title:
4. No of years working in the current position:

Section B : Please tick ✓ for your answer

How do you define IT Governance?

() IT Governance is about making decisions IT investments towards achieving business strategies and how these decisions will be made and monitored (Weill & W.Ross,2004).

() IT Governance is about developing the organization's capability to align the business and IT strategies so that the organization would be able to adapt to changes (Brown & Brown 2011).

() IT Governance is about roles of IT been defined clearly in an organization and been constructed well as business unit to collaborate with other business units to achieve business goals (DeHaes & Grembergen, 2004).

1. What is your agency's organizational structure? What is your IT department organizational structure?
2. To what degree do you have processes in place for clear and active linkage amongst the organizational strategy, the portfolio of ICT-enable investment program that execute the strategy, the individual investment programs, and the business and IT projects that make up the programs?
3. What your annual IT budgets : IT department budget_____, All IT spending_____.
4. What are the vision and mission statement of your organization? What is the business strategy to reach these objectives? To what degree do knowledge workers recognize the role of IT?
5. Do all executive have a sound understanding of strategic IT issues, dependence on IT, technology insights and capabilities?
6. Is there collaboration between IT, business process manager, finance and auditors?
7. For each decision in the decision-making responsibilities matrix (below), place a checkmark in the column for all stakeholders that actively collaborate in decision and have responsibility for decision.

Who has responsibility for the following decisions?	Responsible stakeholder			
	Board/ Executive	Department managers	IT managers	Audit/ Compliance
1. Are IT and the business strategy in alignment				
2. Is the enterprise achieving optimum use of its resources?				
3. Does everyone in the organization understand the IT objectives?				
4. Are IT risks understand and managed?				
5. Is the quality of IT systems appropriate for business needs?				
6. Are IT services being delivered in line with business requirements and priorities?				
7. Are IT costs optimized?				
8. Is the workforce able to use the IT systems productively?				
9. Are adequate confidentiality, integrity and availability in place?				
10. Can IT's performance be measured, and can problems be detected before it is too late?				
11. Is independent assurance needed to assure that critical areas are operating as intended?				